

Proposed Amendments to the Food Adulteration (Metallic Contamination) Regulations (Cap.132V)

**First technical meeting with trade on
20 March 2025**

2. Testing Approach to the Metallic Contaminants

2

Overview of the Proposed Amendments to the Regulations

- ✿ The proposed amendment to the Regulations are summarized as in the following areas:
 - ✿ To add or update the maximum levels (MLs) for lead (Pb), cadmium (Cd) and methylmercury (MeHg) in specific foods with reference to the latest Codex standards; and
 - ✿ To add or update the MLs for Pb and Cd in specific foods with reference to the latest standards of major importing areas

Overview of the Proposed Amendments to the Regulations

- ✿ The total number of MLs will increase from 144 to 171 in this exercise, with 27 new MLs for specified metals (i.e. Pb, Cd and MeHg) in specified foods (food pairs) and 9 update of MLs for Pb in the existing food pairs

Purpose of this Technical Meeting

- ✿ **To provide technical guidance on testing of metallic contaminants in food**
 - ✦ **Introduction to reference methods of analysis**
 - ✦ **Criteria for selection of testing methods**
 - ✦ **Guide to selection of laboratory validation methods**

Reference Testing Methods for Metallic Contaminants in Food

Testing Methods for MeHg



Reference international / national standards

- ✓ GB 5009.17-2021 (LC-AFS)
- ✓ BS EN 16801-2016 (GC-ICP-MS)
- ✓ US FDA EAM 4.8 (LC-ICP-MS)

GB 5009.17-2021



中华人民共和国国家标准

GB 5009.17—2021

食品安全国家标准

食品中总汞及有机汞的测定

第二篇 食品中甲基汞的测定

第一法 液相色谱-原子荧光光谱联用法

EN 16801-2016

BS EN 16801:2016



Foodstuffs. Determination of elements and their chemical species. Determination of methylmercury in foodstuffs of marine origin by isotope dilution GC-ICP-MS

US FDA EAM 4.8



Elemental Analysis Manual for Food and Related Products

The following is a section of the Elemental Analysis Manual for Food and Related Products.

For additional information and to view other sections of the manual, visit the Elemental Analysis Manual for Food and Related Products web page at

<http://www.fda.gov/Food/FoodScienceResearch/LaboratoryMethods/ucm2006954.htm>.

4.8 High Performance Liquid Chromatographic-Inductively Coupled Plasma-Mass Spectrometric Determination of Methylmercury and Total Mercury in Seafood

Testing Methods For MeHg

	GB 5009.17-2021	BS EN 16801-2016	US FDA EAM 4.8
Scope	Food	Aquatic product	Aquatic product
Extraction solution	5M HCl	25% TMAH solution	L-cysteine solution
Extraction condition	Ultrasonic bath 60 min at ambient, and then neutralize with NaOH. Add L-cysteine solution	Ambient, overnight	60°C 120 min
Cleanup	/	Extract by hexane	/
Determination technique	LC-AFS	GC-ICPMS (NaEt ₄ B derivatisation in hexane)	LC-ICPMS
Calibration	External Calibration (MeHg)	IDMS	External Calibration (MeHg)

Testing Methods for Cd



Reference international / national standards

- ✓ GB 5009.15-2023 (GFAAS)
- ✓ GB 5009.268-2016 (ICP-MS)
- ✓ AOAC Official Method 2015.01 (ICP-MS)
- ✓ BS EN 17851:2023 (ICP-MS)

Testing Methods for Pb



Reference international / national standards

- ✓ GB 5009.12-2023 (GFAAS/FAAS)
- ✓ GB 5009.268-2016 (ICP-MS)
- ✓ AOAC Official Method 2015.01 (ICP-MS)
- ✓ BS EN 17851:2023 (ICP-MS)

Methods of Analysis

- ✿ **Internationally/nationally recognised standards are preferred**
- ✿ **Practicability for routine use**
- ✿ **Preference given to methods with established reliability**

Criteria for Selection of Methods

- Performance Characteristics can include, but are not limited to:

- ✿ **Applicability**
- ✿ **Minimum applicable range**
- ✿ **Accuracy**
- ✿ **Limit of Detection (LOD)**
- ✿ **Limit of Quantification (LOQ)**
- ✿ **Precision**
- ✿ **Recovery**
- ✿ **Trueness**

Guide to Laboratory Validation Methods

✿ **Validated according to an internationally recognized protocol, e.g.**

- ✿ **Harmonized IUPAC Guidelines for Single-Laboratory Validation of Methods of Analysis**
- ✿ **EURACHEM Guide ‘The Fitness for Purpose of Analytical Methods: A Laboratory Guide to Method Validation and Related Topics’**
- ✿ **ISO 11843-2 ‘Capability of Detection-Part 2: Methodology in the Linear Calibration Case’**
- ✿ **AOAC INTERNATIONAL ‘AOAC Peer-verified Methods Program-Manual on Policies and Procedures’**

Guide to Laboratory Validation Methods

- ✿ **Embedded in a quality system in compliance with ISO/IEC 17025**
- ✿ **Demonstrated with data on accuracy**
 - ✿ **Participation in proficiency tests**
 - ✿ **Calibration using certified reference materials**
 - ✿ **Study on recoveries**
 - ✿ **Verified with other method(s), etc.**

- END -
(Thank you)